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ABSTRACT

This descriptive research investigated issues relating to college students' use of instructor-created World Wide Web sites at the University of Nevada, Reno. Points of interest included student use of instructor Web pages and features found on a Web page perceived by students as most useful. Student use of instructor Web pages was identified by the amount of time students report they visit the Web site and their recollection of features found on the Web site. A survey consisting of 10 items requiring yes/no, multiple choice, and open-ended responses was designed to generate students' perceptions of the Web site in terms of ease of use, aesthetic appeal, navigation problems, and usefulness of provided information. A total of 249 completed surveys were returned. Results indicate that instructors are increasingly taking advantage of the resources made available through the Internet and are finding an interest in creating Web sites for their classes. Also, students as a whole seem willing and able to use instructor-created Web-sites. However, actual usage by students still seems elusive. Tables show descriptive data of participation, Web site visits by department, and survey questions and responses. (AEF)

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Student Use of Instructors' Web Sites

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Advances in telecommunication technology and computer hardware have made access to the Internet available to more and more people (Kahn, 1997; Maddux & Johnson, 1997). One would be hard pressed to find a campus that doesn't offer students and teachers alike access to the World Wide Web (Web). This hypermedia format provides a unique opportunity for educators to create a variety of rich online learning environments (Dringus, 1995).

Many instructors are taking advantage of this popular medium and creating Web pages for their classes (Quigley, 1994; Dringus, 1995; Young, 1995; Kahn, 1997). These Web sites vary from a simple posting of the course syllabus to multiple pages that include lecture notes, homework assignments, links to other sites, interactive quizzes and password protected grade postings. The advantages of having a course Web site include reduced photocopying (which includes eliminating the expense and the handling of paper); the ability to modify the syllabus any time during the semester; and posting new and pertinent information regarding topics discussed in class. (Young, 1995; Partee, 1996; Starr, 1997) For the most part, it is relatively easy to maintain and update Web pages. (Partee, 1996; Maddux et. al., 1997)

However, the rapid proliferation of Internet resources has resulted in a great deal of useless information being posted to the world. In fact, much of what is transmitted on the Web is self-promotional or commercial. For example, Wilkinson, Bennett, and Oliver (1997) site research done by Debashis in 1995 where an analysis of 1,140 randomly selected Web sites found that 21.93% of the material was public relations and another 20.70% were advertising.

It is reasonable to assume that if students don't find useful information at their instructor's Web site, they won't use it. Accordingly, lack of use makes it difficult for a busy instructor to justify the time and effort needed to create and maintain a Web site. To make matters more complicated, the scarcity of design guidelines creates a great diversity in the quality of school Web pages (Maddux & Johnson, 1997). Both students and teachers would benefit if essential features of a useful Web site could be identified.

Purpose of the Study

The purpose of this descriptive research study was to investigate issues relating to college students' use of instructor created Web sites at the University of Nevada, Reno. The points of interest include student use of instructor Web pages and features found on a Web page perceived by students as most useful. Student use of instructor Web pages was identified by the following factors: the amount of time students report they visit their instructor's Web site, and the students' recollection of features found on their instructor's Web site.

Delimitations and Limitations of the Study

This study is confined to surveying the students at the University of Nevada, Reno. While the sample size (n = 249) is large, it is not a true random selection. The survey instrument did not control for students who had previous computer experience nor make any provisions for those students who had limited exposure to computers. The number of times students visited the instructor's Web site was self-reported and may not accurately reflect the actual time students spend at the instructor's Web page.

It should also be noted that the primary purpose of the instructors' Web sites was to provide information to their students. More precisely, the Web sites were not created to exclusively deliver instruction nor to conduct on-line courses. This delimitation is important as the complexity of Web site design and implementation for on-line instructional Web sites exceeds the scope of this research study.

Significance of the Study

The study of students' use of instructor-created Web sites is important for several reasons. First, by understanding the issues related to effective Web page design, teachers outside the subject area of computer technology could pursue the use of Web-based syllabi. Second, identifying and capitalizing on specific Web page design elements frees up time, a limited resource for instructors. Third, by identifying Web site features preferred by students, i.e., the ability to preview test questions and to see homework solutions, instructors can develop more effective Web sites for their classes.

Methods

Research Design

In this descriptive study, 12 instructors were randomly selected from five different colleges at the University of

Nevada, Reno (UNR). The instructors were identified from UNR's faculty Web page and departmental Web page. However, this was a sample of convenience as surveys were distributed only to those students whose instructors agreed to participate in the study.

Instrumentation and Materials

The survey developed to elicit students' use of their instructor's Web site consisted of 10 items requiring yes/no, multiple choice and open-ended responses. The survey items were designed to generate students' perceptions of the Web site in terms of ease of use, aesthetic appeal, navigation problems, and usefulness of provided information. The survey was administered in paper format. The students completed the survey once for each class; however, it is possible that a student might have participated in completing the survey for different classes.

Discussion and Remarks

Surveys were distributed to ten instructors, which represented five colleges and approximately 300 students. Three instructors did not return surveys, leaving one college without representation. Table 1 shows the distribution of the returned surveys by college and department. Of the 300 distributed surveys, 249 completed surveys were returned, for an 83% response rate. Surveys were considered completed if the students answered any questions, even though some surveys appeared to be incomplete. The largest number of students participating was from the Computer Information Systems department, which accounted for 38.2% of the returned surveys.

Table 1.
Descriptive Data for College Participation.

College Department	Frequency	%
Arts & Science		
Biology	26	10.4%
Chemistry	39	15.7%
Math	20	8.0%
Business		
Computer Information Systems	95	38.2%
Education		
Counseling & Educational Psychology	9	3.6%
Curriculum & Instruction	27	10.8%
Engineering		
Computer Science	33	13.3%

Partee (1996) says that "the success of using communications technology in class depends on the swift and uniform introduction of all students to this form of interaction." That almost 86% of the surveyed students had seen their instructor's Web site is not surprising. In follow-up interviews with the instructors, everyone had made some attempt to encourage their student's use of the class Web site. One instructor posted class assignments on the Web site, requiring students to retrieve the assignments on their own. Another instructor had created an activity that not only required the students to retrieve their assignment from the Web site, but also required they do so in the computer lab and to have the lab assistant sign off that they had indeed done so. Other instructors conducted class demonstrations on how to get to the Web site and navigate its contents. Only one instructor had not required the students visit the class Web site.

Table 2 show the affirmative responses to the "Have you seen the Web site" question by department. As one would expect, all the Computer Science and a good majority (83.2%) of the Computer Information Systems students had visited their instructors' Web sites. Interestingly, the poorest visitation rate (Math, 50%) was for a Web page that offered incredibly useful and unique information. This Web site included password protected posting of grades, solutions to homework problems, interactive demonstrations of math theorems, and interactive quizzes to help prepare for classroom tests. Perhaps as a reflection of many of the Math students, one student commented "Sorry, but for the most part, the 'Web' doesn't do much for me."

Table 2.
Web Site Visits by Department.

Department	Frequency	%
Biology	24	92.3%
Chemistry	36	92.3%
Computer Information Systems	79	83.2%
Computer Science	33	100.0%
Education	32	88.9
Math	10	50.0%

More importantly, 96.3% of the students who had visited their instructor's Web site knew how to get to the Web site on their own. The assumption is supported by the fact that 70% of the students reported visiting the Web site any where between a "couple of times this semester" to several times a week. In addition, the students remembered with a fair amount of accuracy that the instructor's Web site contained the class schedule (76.6%), the instructor's office hours (76.6%), and homework assignments (69.2%). The results of all the survey questions are reported in Table 3.

Partee (1995) also said "Any student lacking access to the network labors under a real disadvantage relative to other students regarding general course policies, assignments, and lecture information." This is particularly true if the instructor does not provide this information in printed form. However, survey results show that over half of the students (53.6%) used the computer lab provided by the school to access the Web site so access to the Internet doesn't appear to be a problem. In addition, 39.1% of the students said they visited the Web site from home; all of

which supports the literature that says more and more people have access to the Internet.

The most popular items on class Web pages seemed to be the homework assignments (49.1%) and the class schedule (40.2%). While none of the students made any comments regarding the posting of the class schedule, many students had something to say about the assignments. They asked that assignments be posted "in a timely manner", at least a week before they were due, and contain information such as what is expected, due dates, and grading criteria. One student even suggested that the instructor post "an example of some prior papers." Another frequent request was for homework solutions. Some frustration must have occurred as many students commented that they needed more instruction on how to retrieve the homework assignments.

Links to other relevant sites was also a very popular feature (34.6%) and rated the third top feature for improving the Web site. One student commented, "I think his Web site is extremely useful; especially the links he enables us access to at other relevant sites." Only two students commented on links that didn't go anywhere. Table 4 shows a selected sample of other student comments.

Lecture notes was another popular item (23.3%). Some of the comments included "explanations of lectures", "more concise groupings of topics", and to "put the lecture notes out earlier, not the day of class." More importantly, lecture notes was the item that most students selected (26.2%) as feature that would make the Web site more useful.

There did not appear to be any problems with the appearance of the instructors' Web pages as there were no specific comments regarding this issue. The students recalled that they contained graphics (58.4%) and a variety of colors (52.3%). These features also ranked high in both the most liked and the least liked features. Moreover, these were not features that could be improved upon to make the Web site more useful. However, many students commented that they didn't like waiting for graphics to download. The least liked feature was sound (21.0%).

Construction of the Web pages didn't seem to be problem either. Most of the students (73.8%) responded that they were able to navigate to and from information links with relative ease and convenience. Most of the comments suggested the problem was the students' a lack of experience and knowledge in how to use the Web browser. Another frequent complaint was the amount of time the server was down, thus preventing the students from even getting to the Web site.

In summary, students are using the class Web sites created by their instructors and they are doing so from either the schools computer lab or home. While many are frustrated by their lack of experience with using Web browser, overall they understand its potential usefulness. To make the most of class Web site, instructors should require students to use the Web site very early in the class and perhaps not provide printed copies of information that they have posted. In construction of the Web page, graphics and sound should be used appropriately, as students don't like to feel their time is being wasted on "frilly" extras. Lecture notes and homework solutions are the two features students determined would make the Web sites more useful.

While Dringus (1995) was primarily concerned with on-line courses, her recommendation that instructors conduct a usability evaluation is still applicable to course Web sites. This can be done as a survey to a sample of students during the design phase, as the course evolves, or at the end of an academic term. The results should assist the instructor in determining design improvements for the course Web site.

Implications for Further Research

The responses recorded in this study support the finding of many other researchers regarding student and teacher use of the Internet. That is, instructors are increasingly taking advantage of the resources made available through the Internet and are finding an interest in creating Web sites for their classes. Also, students as a whole seem willing and able to use instructor created Web sites. However, actual usage by students still seems elusive. As this could be attributable to a variety of factors, this survey should be conducted again with a larger and more randomized sample. Further experiments could be done to determine specifically how students are using their instructors' Web, i.e., only for assignment retrieval, homework solutions, or lecture notes. Other items that might be explored concern the appearance of the Web pages such as screen layout, color, navigation options, and feedback options.

Table 3.
Responses to the Survey.

Item	Frequency	Percent
1. Have you seen the Web site?		
Yes	214	85.9%
No	35	14.1%
2. Do you know how to get to the Web site?		
Yes	207	96.3%
No	8	3.7%
3. How many times have you visited the Web site outside of class?		
Haven't yet	24	11.1%
Once	43	19.8
A couple of times this semester	68	31.3%
Once or twice a week	48	22.1%
Several times a week	34	15.7%
4. Most of the time how do you access the Web site?		
Computer lab	118	53.6%
Work	10	4.6%
Home	86	39.1%
Other	6	2.7%

5. Which of the following features are available at the Web site?		
Graphics	125	58.4%
Variety of color	113	52.3%
Sound	26	12.2%
Animation	28	13.1%
Lecture notes	73	34.1%
Homework assignments	148	69.2%
Class schedule	164	76.6%
Instructor's office hours	164	76.6%
Links to other relevant sites	105	49.1%
Other	21	9.8%
6a. What do you like most about the Web site?		
The colors	44	20.6%
The sounds	13	6.1%
The graphics	50	23.3%
The animation	18	8.4%
The lecture notes	63	29.4%
The class schedule	86	40.2%
The homework assignments	105	49.1%
The links to other relevant sites	74	34.6%
Other	15	7.0%
6b. What do you like least about the Web site?		
The colors	37	17.2%
The sounds	45	21.0%
The graphics	28	13.1%
The animation	35	16.4%
The lecture notes	19	8.9%
The class schedule	11	5.1%
The homework assignments	15	7.0%
The links to other relevant sites	12	5.6%
Other	17	7.9%
Are you able to navigate to and from information links with relative ease and convenience?		
Yes	158	73.8%
No	31	14.5%
9. What would make the Web site more useful to you?		
Don't have an opinion because I've gotten by without it	41	19.2%
Better graphics	14	6.5%
Different colors	11	5.1%
Animation	9	4.2%
Sound	9	4.2%
Lecture notes	56	26.2%
Class schedule	10	4.7%
Homework assignments	19	8.9%
Instructor's office hours	7	3.3%
The links to other relevant sites	22	10.3%
Other	34	15.9%

Table 4.
Students' (S) Selected Responses to Survey Question 10:

"In what other ways could the Web site be improved."

S14: The titles in the homework should match the titles in the book.
S49: Smaller fonts.
S54: Reduce size of page – too much scrolling!
S75: Make it more mandatory in the curriculum of the class. Maybe if we were required to use the Web site in order to access certain material pertinent to class.
S85: It's for a class and because of time constraints there should be less graphics. All I want when I go to the site is the written material I can print for reference!!
S108: Graphics, animation, homework assignments dated on a more timely basis. An example of some prior papers.
S110: Better display - clear presentation of assignment and due dates. Whether assignments need to be handed in etc.
S122: Make it clearer as to how the student accesses other informative links and sites.
S132: Clearer access instructions
S138: By giving students practice quizzes or tests to focus on main points of lecture.
S147: Because I use it for school and time is limited I would like less graphics for faster download times.
S168: Since it is a computer class, it should showcase technology, i.e., graphics, colors etc.
S223: With a new picture.
S233: Put notes and homework.

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